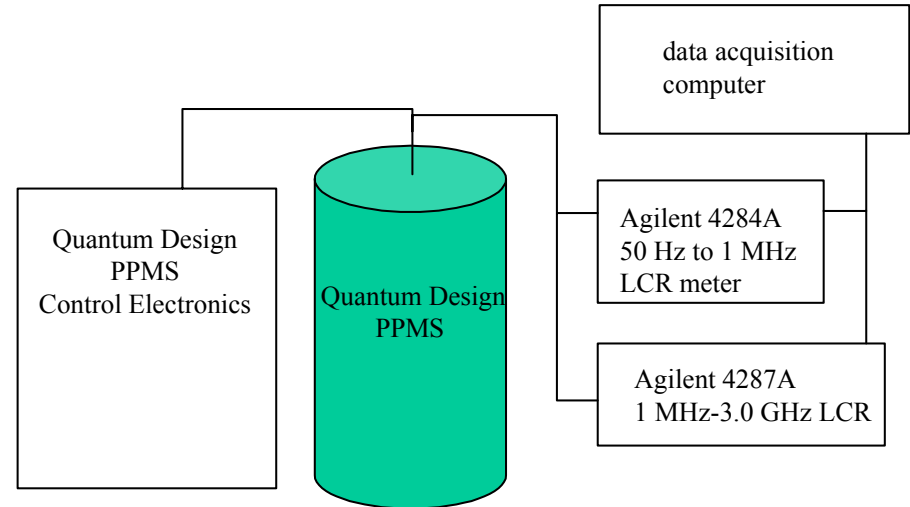


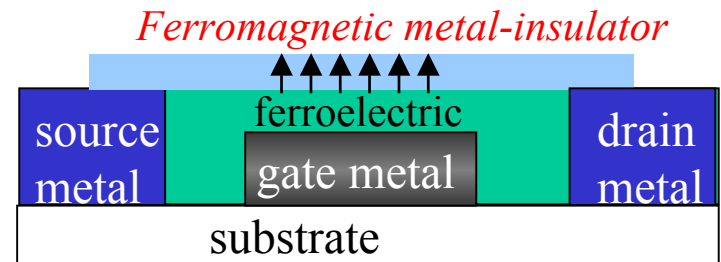
Development of High Temperature Physical Property Measurement System for Probing Spin and Charge-Functionalized Thin-Film Materials

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- The objective of this project is to develop instrumentation to characterize the magneto-transport, optical, and thermal properties of thin-film materials and devices over an extended temperature and magnetic field range.
- The principal motivator for this instrumentation is in the investigation of spin-doped nitride and oxide phenomenon and device concepts, such as that illustrated in the figure. The additional degree of freedom offered by the electron spin presents unique opportunities in computation and communication, potentially useful for data storage and switching in the form of spin diodes, nonvolatile spin memory, and spin-FET's.
- This instrument provides a platform to understand and exploit spin-based phenomenon.



7 Tesla magnetic field , AC susceptibility, dc magnetization, I-V, Hall measurements, thermal conductivity measurements, complex impedance, temperature range of 4.2 K to 380 K.



Spin-based 3-terminal device